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# Kongeriget Danmark

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**Patent- og Varemærkestyrelsen**  
Økonomi- og Erhvervsministeriet

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A STARTING BLOCKField of the Invention

The present invention relates to a starting block for  
5 athletic running, comprising an elongated frame having a  
longitudinal axis, which extends between a first end and  
a second end of the frame, said frame being adapted to be  
attached to a ground in both ends of the frame, at least  
one take-off block to be arranged in connection with said  
10 frame, the take-off block comprises a take-off surface.

Furthermore, the present invention relates to a take-off  
block, an elongated frame, an adjustment device as well  
as uses of the starting block, the take-off block, the  
15 elongated frame and the adjustment device.

Background Art

Starting blocks for athletic running is known in the  
20 prior art, which starting blocks comprises elements as  
set forth by way of introduction. The starting blocks are  
used in connection with for instance athletes are lining  
up for the start in a 100, 200 or 400 metre run.

25 In order to provide the best starting conditions for the  
athletes which are participating in the sprint the start-  
ing blocks can be individually adapted to each athlete  
having regard to for instance their physical, which leg  
they are using to take-off with, their running style etc.

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In the known starting blocks this are carried out by placing the take-off blocks on the frame having a predetermined distance between them which is suitable for the individually athlete.

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In order to obtain better and better time for the athletes on the short runs an extensive research is carried out especially in view of that every 1/100 second, which may be shorten of the final time is important.

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Most of this research is concerned to how the take-off of the starting block in the start is optimised, how the running style of the athletes are optimised, the physical training of the athletes as well as the running shoe.

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Especially, research have shown that several metres of the run, after start, are used by the athletes to obtaining their optimal running style and thereby achieve their maximum running speed. As a consequence the athlete is using, after leaving the starting block, a great amount of force for rapidly obtaining the optimal running style, however, a large portion of the force is lost due to the large laterally movements of the athlete during the start.

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#### Summary of the Invention

An object of the present invention is to wholly or partly overcome the above disadvantages and drawbacks of the prior art. More specifically, it is an object to provide a starting block which reduces the laterally movements of the athlete just after they have left the starting block.

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It is also an object of the present invention to provide a starting block which may be used in connection with training purposes for athletes.

- 5 Furthermore, it is an object of the present invention to provide a take-off block which may be used in connection with sports using starting arrangements.

10 The above object, together with numerous other objects, advantages and features, which will become evident from the below description, are accomplished by a solution in accordance with the present invention by the take-off surface is angular adjustable in a laterally direction in relation to the longitudinal axis of the frame.

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Hereby is obtained that the athlete may achieve better results, i.e. times. Additionally, the starting as well as the running style may be essentially improved as the inventive starting block substantially completely or at least partly eliminates the large laterally movements of the athlete just after start.

25 By adjusting the angle of the take-off surface in a laterally direction in relation to the longitudinal axis of the frame it is further achieved that the first steps of the athlete, just after leaving the inventive starting block, will be near to the centre of the optimal running path and whereby the athlete is avoiding the laterally movements. Accordingly, the athlete may use substantially most of the force from the take-off to rapidly building up the maximum speed without losing too much energy due to the laterally movements as the matter is with the prior starting blocks. Furthermore, the running style of

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the athlete is more aesthetic as the laterally movements is reduced.

Further preferred embodiments according to the invention  
5 are defined in the depended claims.

The invention furthermore relates to a take-off block comprising a take-off surface. The take-off block being characterised in that the take-off surface is angular adjustable in a laterally direction.  
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In addition the invention relates to an elongated frame for a starting block, said frame having a longitudinal axis, which extends between a first end and a second end, said frame being adapted to be attached to a ground in both ends of the frame, said frame having a width. The elongated frame being characterised in that the width of frame is adjustable.  
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20 The invention also relates to an adjustment device for a take-off block comprising a take-off surface. The adjustment device being characterised in that, the adjustment device is adapted to adjust an angle of the take-off surface in a laterally direction.

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Finally, the invention relates to the use of the starting block, the take-off block, the elongated frame as well as the adjustment device.

30 Brief Description of the Drawings

The invention and its many advantages will be described in more detail below with reference to the accompanying

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schematic drawings, which for the purpose of illustration show some non-limiting embodiments and in which

Fig. 1 shows in a perspective view a starting block according to the invention,

Fig. 2 shows in a side view the starting block of Fig. 1,

Fig. 3 shows in a top view the starting block of Fig. 1,

Fig. 4 shows in a perspective view a take-off block according to the invention seen from the side,

Fig. 5 shows in a perspective view the take-off block of Fig. 4 seen from the back, and

Fig. 6 shows in a top view another embodiment of the starting block according to the invention.

All the figures are highly schematic and not necessarily to scale, and they show only parts which are necessary in order to elucidate the invention, other parts being omitted or merely suggested.

#### Description of Preferred Embodiments

Fig. 1 shows in a perspective view a starting block 1 according to the invention. The starting block 1 comprises an elongated frame 2 having a longitudinal axis (not shown), which extends between a first end 3 and a second end 4 of the frame 2.

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The frame 2 is adapted to be attached to a ground in both ends 3, 4 of the frame 2. In the shown embodiment the frame 2 has mounted elements 5, 6 having holes, wherein attachment means (not shown) are to be inserted into the ground and thereby fixate the frame 2. Said attachments means may for instance be pins or spikes.

Advantageously, the attachment means, i.e. pins or spikes, may be inserted into the ground with an angle in relation to the ground, said angle not being 90°. Hereby is obtained that the attachment means are forced further into the ground when the athletes are taking off from the starting block. A more secure fixation of the frame 2 is obtained wherein substantially all the force from the athletes taking off is being used to a forward force and said force not being lost in the movement of the frame 2.

In this embodiment the frame 2 is made of a profile having an U-shaped configuration, said profile preferably being of metal. In both vertically flanges of the U-shaped profile slits 7 are arranged having a mutual spaced apart relationship along the elongated frame 2. Said slits 7 is adapted to receive fastening means of take-off blocks 8, 9 and furthermore enabling that the take-off blocks 8, 9 may be individually adjusted along the frame 2.

According to an aspect of the invention, the slit(s) 7 may be arranged having an extension, said extension being larger than the fastening means so that a movement between the frame 2 and the take-off block 8, 9 may be possible. It is of high importance that the take-off blocks 8, 9 during the taking off of the athlete always are se-

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curely fixated to the ground. Due to the larger extension of the slit in relation to the fastening means a play is obtained wherein the frame 2 may move up and down in a vertical direction without influencing the position of the take-off blocks 8, 9 on the ground. Thereby is obtained that after setting up the take-off blocks the athlete is sure that he/she always will have a secure fixation of the take-off blocks 8, 9.

10 The take-off blocks 8, 9 will be further described below in connection with Figs. 4 and 5.

Fig. 2 shows in a side view the starting block 1 of Fig. 1. The starting block 1 is in this embodiment shown with a length L of approximately 850 mm, which is a standard length in the art. Furthermore, the two take-off blocks 8, 9 are shown displaced in relation to each other thereby enabling the sprinter to set up the starting block to his or hers preferred starting position as explained in the introductory part.

The take-off blocks 8, 9 comprise a take-off surface 10. In Fig. 2 it is furthermore shown that the take-off surfaces are angular adjustable in a vertical direction in relation to the ground, i.e. the take-off surface may be sloped. This angular adjustment is indicated by  $\alpha$ .

The take-off blocks 8, 9 comprise adjustment means 11 adapted to adjust the angle  $\alpha$  of the take-off surface 10 in relation to the ground. Said adjustment means 11 will be further described below in connection with Figs. 4 and 5.



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Fig. 3 shows the starting block 1 of Fig. 1 seen from above. In this embodiment it is easily deduced that the take-off surfaces 10 of the take-off blocks 8, 9 are angular adjustable in a laterally direction in relation to the longitudinal axis of the frame 2.

Advantageously, the take-off surfaces 10 are angled towards the longitudinal axis of the frame 2 so that the take-off surfaces 10 are turned against the frame 2.

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According to the invention the take-off surfaces 10 may have an angle  $\beta$  of 0-20°, preferably of 2-10° in relation to the longitudinal axis of the frame 2.

Fig. 4 shows in a perspective view a take-off block 8 according to the invention seen from the side.

On the side of the take-off block 8 fastening means 12 is arranged. The fastening means 12 is in this embodiment shown as having an extension, i.e. a width. The extension makes it possible to achieve a secure fixation of the starting block 8 in a transverse direction when arranged on the frame. A screw 13 is furthermore arranged to engage with the slits of the frame whereby the starting block is secured in the longitudinal direction of the frame.

The take-off surface 10 comprises in this embodiment two surfaces 14, 15 having an angle in relation to each other. Hereby is obtained that the take-off surface 10 may be adapted to the form and the anatomy of the foot of the athlete.

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According to a preferred embodiment of the invention the take-off surface may comprise a resilient material, such as for instance rubber or synthetic materials, whereby a foot support surface, i.e. the take-off surface, is obtained having elastic or resilient properties.

Furthermore, a groove 16 is arranged in the side of take-off block 8. Said groove 16 being adapted to receive a tap 11 which enables the angular adjustment of the take-off surface 10 in the vertical direction. The adjustment means 11 comprises a screw 17 which may be turned via the handle 18 so that the take-off surface 10 may be angled to fit a certain athlete.

In Fig. 5 is the take-off block 8 shown from the back. In this embodiment the adjustment device 20 is adapted to adjust the angle of the take-off surface 10 in relation to the longitudinal axis of the frame. The adjustment device 20 may comprise a screw 21 and a bolt 22 or the like. By turning the handle 23 the take-off block starts to pivot around a turning point 24 whereby the take-off surface is being angled, preferably against the frame.

In this embodiment the adjustment device 20 comprises the screw 21 and the bolt 22, however, according to the invention the adjustment device may have other designs, which will be appreciated by a person skilled in the art.

However, it is of high importance that the adjustment of the angle  $\beta$  of the take-off surface is carried out with the highest accuracy substantially without any play so that the athletes have the opportunities to set up the take-off blocks identically each time.

According to the invention the frame may further be attached to the ground substantially in between the ends of the frame. Hereby, a more rigid frame is provided which  
5 secures that the force the sprinter is using to take-off from the starting block is used for forward movement of the athlete and not for bending the frame. This is especially important due to the fact that when using the inventive starting block wherein the take-off surface is  
10 angled a force will also be exerted on the frame in an angle away from the longitudinal axis of the frame, which force essentially may bend the frame.

Advantageously, the take-off block may be adjustable  
15 along the frame.

According to an aspect of the invention the frame 2 may have a width, said width being adjustable (not shown). Advantageously, this may be carried out by the frame 2  
20 comprises an adjustment device (not shown) which is adapted to adjust the width of the frame 2.

The adjustment device may for instance comprise a screw and a bolt or the like.  
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Hereby it is obtained that the width of the frame may be adjusted to fit the individual athlete having regard to their anatomy so that the feet of the athletes in the starting block are placed near the centre of the optimal  
30 running path.

According to another embodiment according to the invention an additional module 25 may be arranged between the

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frame 2 and the take-off block 8, 9, said module 25 being adapted to adjust a distance  $d_1$ ,  $d_2$ ,  $d_3$  between the frame 2 and the take-off block 8, 9 as shown in Fig. 6. In this embodiment the distances  $d_1$ ,  $d_2$ ,  $d_3$  are taken between the  
5 frame 2 and the opposite side of the take-off block 8, 9 facing away from the frame 2. The frame 2 is shown having a width  $w$ .

Advantageously, the module 25 may comprise a plurality of  
10 predetermined distances  $d_1$ ,  $d_2$ ,  $d_3$  as shown in Fig. 6. In this embodiment distance elements are arranged in connection with the fastening means of the take-off block 8, 9, whereby the athlete may adjust the width of take-off  
15 block 8, 9 in relation to the frame 2 so that the athlete's individual optimal starting position may be obtained.

In another embodiment (not shown) the module 25 may comprise adjustable means wherein the distance between the  
20 frame and the take-off blocks may be adjusted optionally between two extreme points. The adjustable means could for instance be a screw and a bolt.

According to the invention the inventive starting block  
25 may be used in connection with starting procedures for sprints, such as 100, 200 and 400 metres run. However, the starting block may also be used in training purposes for other types of sport, wherein training of the legs, running style as well as speed are of high importance.

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Thus, the starting block may be used to train as well as coach the user in obtaining an optimal as well as efficient running style by substantially avoiding or at least

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eliminating the laterally movements. By using the starting block the laterally movements of the user is essentially transferred to substantially forward movements, whereby the energy used is used to build up speed.

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Advantageously, the inventive take-off block may be used for sports wherein starting arrangements are used such as running, swimming or the like or for sports wherein running is an essential part, such as for instance football, 10 rugby, baseball, handball, basketball, long jump, high jump, triple jump, athletics in general, gymnastic or the like.

The elongated frame may expedient be used for an starting 15 block to be used in relation to athletic running, such as sprints, or for training purposes in relation to sports wherein running is an essential part.

Also, the adjustment device may advantageously be used 20 for a starting block.

According to another aspect of the invention the inventive idea may advantageously be used in connection with bicycling due to the fact that large laterally movements 25 of the bicycle as well as of the bicyclist are major disadvantages present in that sport also.

Although the invention above has been described in connection with preferred embodiments of the invention, it 30 will be evident for a person skilled in the art that several modifications are conceivable without departing from the invention as defined by the following claims.

Claims

1. A starting block (1) for athletic running, comprising an elongated frame (2) having a longitudinal axis, which  
5 extends between a first end (3) and a second end (4) of the frame (2), said frame (2) being adapted to be attached to a ground in both ends of the frame (2), at least one take-off block (8, 9) to be arranged in connection with said frame (2), the take-off block (8, 9) comprises a take-off surface (10), characterised in that  
10 the take-off surface (10) is angular adjustable in a laterally direction in relation to the longitudinal axis of the frame (2).
- 15 2. A starting block (1) according to claim 1, wherein the take-off surface (10) is angled towards the longitudinal axis of the frame (2) so that the take-off surface (10) is turned against the frame (2).
- 20 3. A starting block (1) according to claims 1 or 2, wherein the take-off surface (10) has an angle ( $\beta$ ) of 0-20°, preferably of 2-10° in relation to the longitudinal axis of the frame (2).
- 25 4. A starting block (1) according to any one of the preceding claims, wherein the take-off block (8, 9) comprises an adjustment device (20) adapted to adjust the angle ( $\beta$ ) of the take-off surface (10) in relation to the longitudinal axis of the frame (2).
- 30 5. A starting block (1) according to claim 4, wherein the adjustment device (20) comprises a screw (21) and a bolt (22) or the like.

6. A starting block (1) according to claim 1, wherein the take-off surface (10) comprises at least two surfaces having an angle in relation to each other.

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7. A starting block (1) according to claim 1, wherein the take-off surface (10) comprises a resilient material, such as for instance rubber or synthetic materials.

10 8. A starting block (1) according to claim 1, wherein the take-off surface (10) is angular adjustable in a vertical direction in relation to the ground.

15 9. A starting block (1) according to claim 8, wherein the take-off block (8, 9) comprises adjustment means (11) adapted to adjust the angle ( $\alpha$ ) of the take-off surface (10) in relation to the ground.

20 10. A starting block (1) according to any one of the preceding claims, wherein the frame (2) is further attached to the ground substantially in between the ends of the frame (2).

25 11. A starting block (1) according to any one of the preceding claims, wherein the take-off block (8, 9) is adjustable along the frame (2).

30 12. A starting block (1) according to any one of the preceding claims, wherein the frame (2) have a width, said width being adjustable.

13. A starting block (1) according to claim 12, wherein

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the frame (2) comprises an adjustment device adapted to adjust the width of the frame (2).

14. A starting block (1) according to claim 13, wherein  
5 the adjustment device comprises a screw and a bolt or the like.

15. A starting block (1) according to any one of the claims 1 to 11, wherein an additional module (25) is arranged between the frame (2) and the take-off block (8, 9), said module (25) being adapted to adjust a distance between the frame (2) and the take-off block (8, 9).

16. A starting block (1) according to claim 15, wherein  
15 the module (25) comprises a plurality of predetermined distances (d1, d2, d3).

17. A starting block (1) according to any one of the preceding claims, wherein the frame (2) comprises attachment means, said attachment means being adapted to be inserted into the ground with an angle in relation to the ground, said angle not being 90°.

18. A starting block (1) according to any one of the preceding claims, wherein the take-off block (8, 9) comprises fastening means, said fastening means being adapted to engage a slit (7) arranged in the frame (2).

19. A starting block (1) according to claim 18, wherein  
30 the slit (7) is arranged having an extension, said extension being larger than the fastening means so that a movement between the frame (2) and the take-off block (8, 9) is possible.



20. A take-off block comprising a take-off surface (10), characterised in that the take-off surface (10) is angular adjustable in a laterally direction.

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21. A take-off block according to claim 20, wherein the take-off block comprises an adjustment device (20) adapted to adjust the angle ( $\beta$ ) of the take-off surface (10) in the laterally direction.

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22. A take-off block according to claim 21, wherein the adjustment device (20) comprises a screw (21) and a bolt (22) or the like.

15 23. An elongated frame (2) for a starting block (1), said frame (2) having a longitudinal axis, which extends between a first end (3) and a second end (4), said frame (2) being adapted to be attached to a ground in both ends of the frame (2), said frame having a width, characterised in that the width of frame is adjustable.

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24. An elongated frame according to claim 23, wherein the frame (2) comprises an adjustment device adapted to adjust the width of the frame (2).

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25. An elongated frame according to claim 24, wherein the adjustment device comprises a screw and a bolt or the like.

30 26. An adjustment device for a take-off block comprising a take-off surface (10), characterised in that, the adjustment device is adapted to adjust an angle of the take-off surface (10) in a laterally direction.

27. An adjustment device according to claim 26, wherein the adjustment device comprises a screw and a bolt or the like.

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28. Use of a starting block (1) according to claims 1-19 for athletic running, such as sprints, or for training purposes in relation to sports wherein running is an essential part.

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29. Use of a take-off block according to claims 20-22 for sports wherein starting arrangements are used such as running, swimming or the like or for sports wherein running is an essential part.

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30. Use of an elongated frame according to claims 23-25 for an starting block to be used in relation to athletic running, such as sprints, or for training purposes in relation to sports wherein running is an essential part.

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31. Use of an adjustment device according to claims 26-27 for a starting block (1).

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Title

A starting block

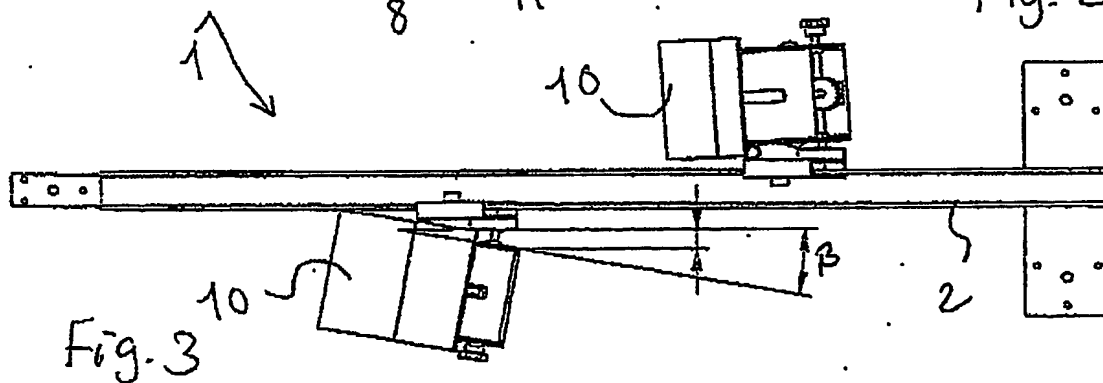
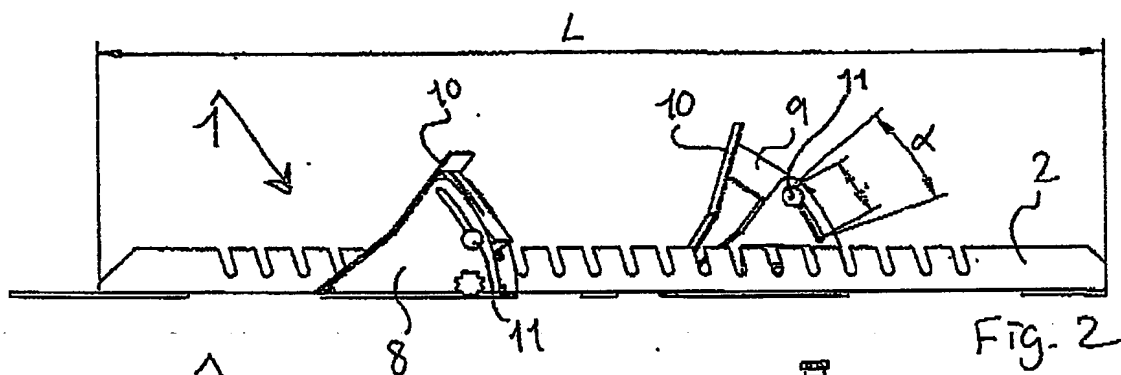
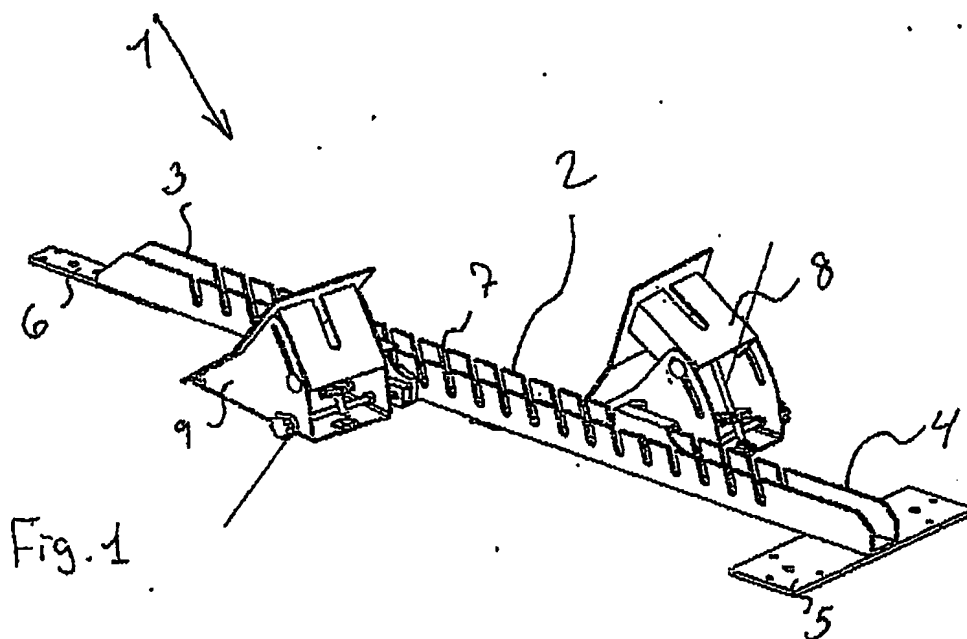
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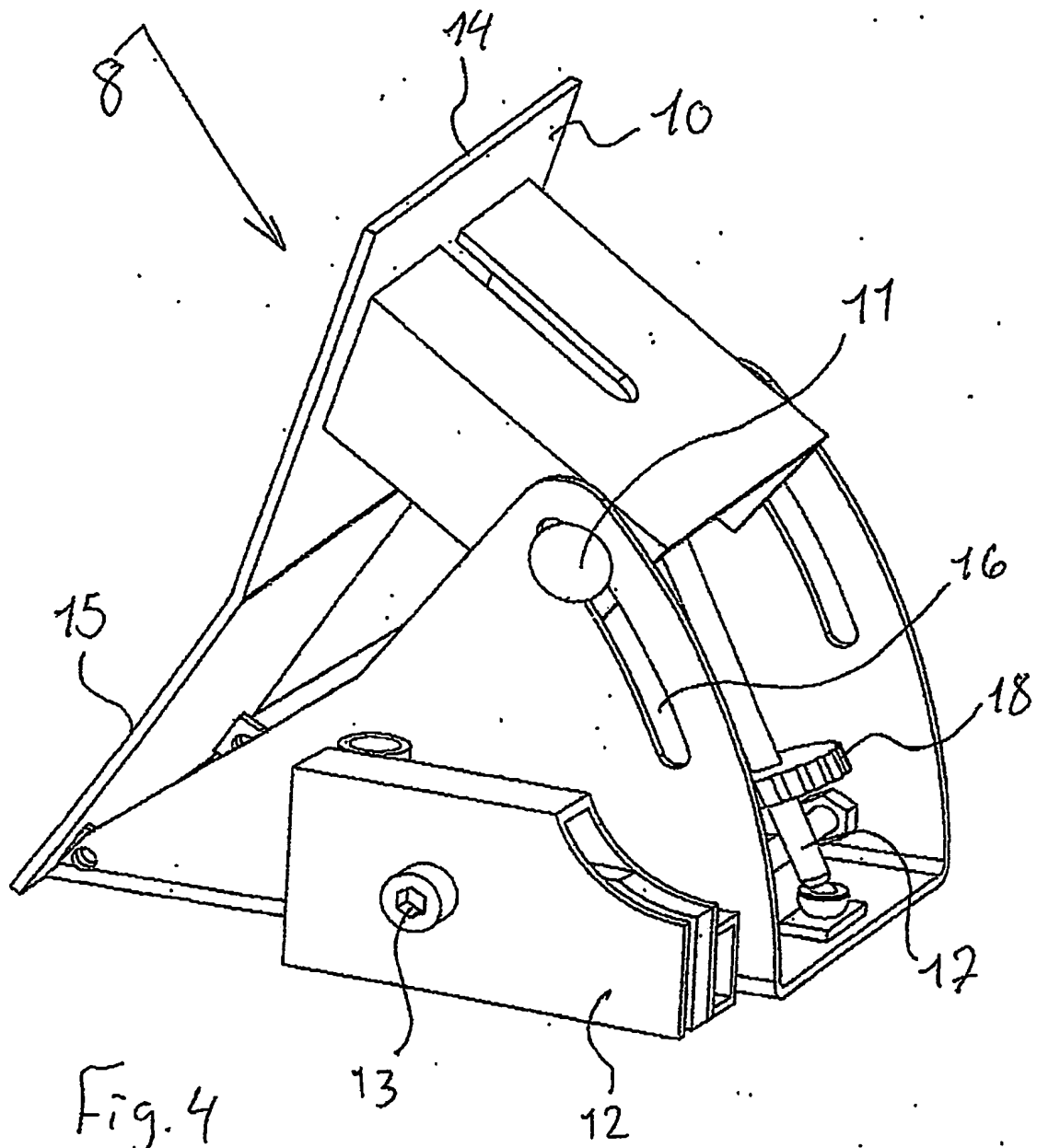
Abstract

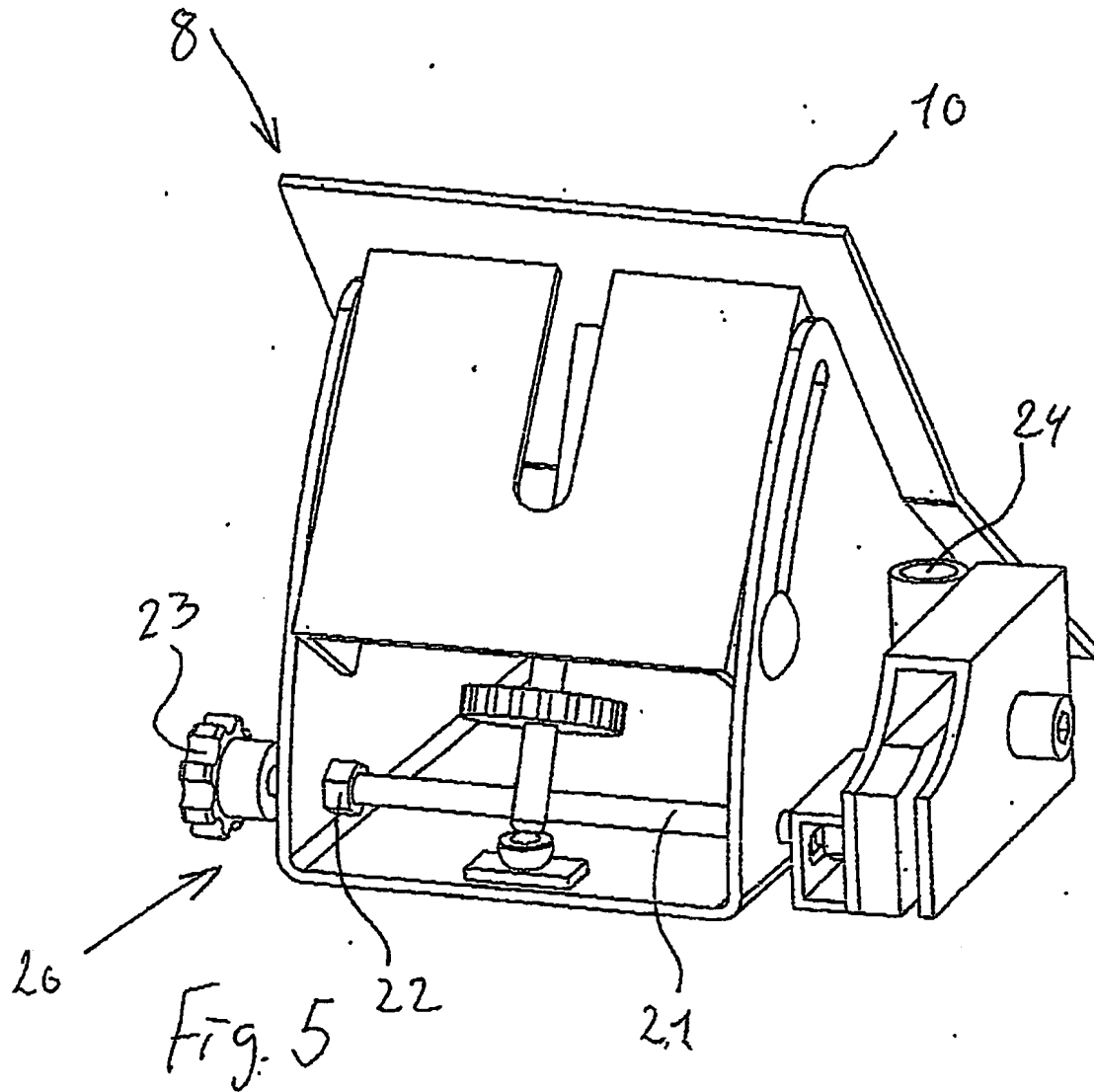
The present invention relates to a starting block (1) for athletic running. Said starting block comprises an elongated frame (2) having a longitudinal axis, which extends between a first end (3) and a second end (4) of the frame (2), said frame (2) being adapted to be attached to a ground in both ends of the frame (2), at least one take-off block (8, 9) to be arranged in connection with said frame (2), the take-off block (8, 9) comprises a take-off surface (10). The starting block is characterised in that the take-off surface (10) is angular adjustable in a laterally direction in relation to the longitudinal axis of the frame (2).

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Fig. 1







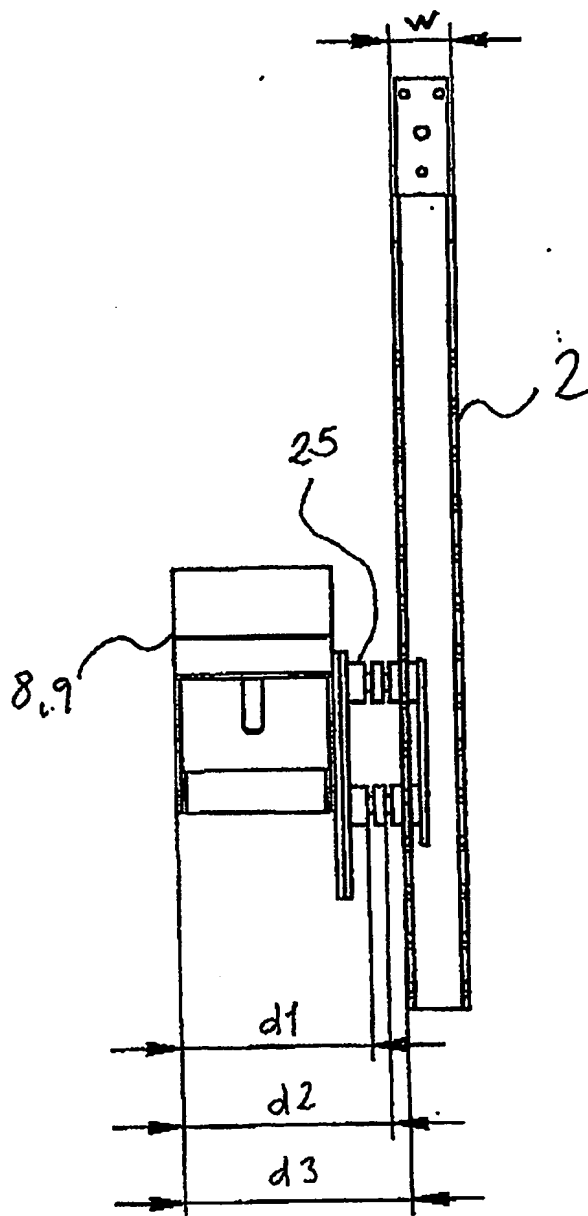


Fig. 6

# Document made available under the Patent Cooperation Treaty (PCT)

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